

REMARKS

Reconsideration of this application is respectfully requested in view of the following remarks.

Claims 1-28 were pending in this Application. In the Office Action:

- Claims 1-6, 14, 16-19 and 21-23 were rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent No. 5,751,403 to Mizutani et al. ("Mizutani").
- Claims 7, 15, 20 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizutani.
- Claims 8-13 and 25-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizutani as applied to claims above, and further in view of U.S. Patent No. 5,754,341 to Takata et al. ("Takata").

Claims 1-28 remain pending in this application.

For the reasons set forth below, Applicants respectfully traverse both the rejection of claims 1-6, 14, 16-19, and 21-23 under U.S.C. § 102(b), and the rejection of claims 7-13, 15, 20 and 24-28 under 35 U.S.C. § 103(a).

Rejection of Claims 1-6, 14, 16-19 and 21-23 under 35 U.S.C. § 102(b)

Rejection of Independent Claim 1 and Dependent Claims 2-6, 14, and 16-17

Mizutani does not anticipate claim 1 because the teachings of Mizutani fail to disclose, in at least two respects, the detector recited in claim 1 as being configured to measure an amplitude of at least one order of a diffraction pattern resulting from an interference of the second pattern and the projected image.

Claim 1 of this Application recites a measurement device comprising, a first object having a first pattern; a second object having a second pattern corresponding to the first pattern; a projection system configured to project an image of the first pattern onto the second pattern; and a detector configured to measure an amplitude of at least one order of a diffraction pattern resulting from an interference of the second pattern and the projected image. Thus, the recited detector is configured to measure *amplitude* of a diffraction pattern formed by the interference of *a first object pattern* (the projected image of the first object pattern) and a second object pattern.

Mizutani fails to teach at least two aspects of the recited detector. In the Office Action, to support the assertion that Mizutani teaches this claim limitation, the Examiner relies on elements (25, 26) and column 13 of Mizutani. However, while Mizutani does teach that elements 25 and 26 (FIG. 1) are a photoelectric detecting unit and a reference detector, respectively, nowhere does Mizutani teach that either of these detectors is configured to measure an *amplitude* of at least one order of a diffraction pattern resulting from an interference of a second (object) pattern and a projected image (of a first object pattern). Rather, Mizutani discloses measuring a *phase* (column 14, lines 35-43) difference from signals generated by crossing pairs of laser beams LB12, LB22 (see column 13, line 13-14) that impinge on a wafer grating 18b (Fig. 10).

Moreover, even if one assumes for the sake of argument that the wafer grating 18b of Mizutani constitutes a *second* object pattern (which it does not), nowhere does Mizutani disclose a diffraction pattern formed by interference of a *projected image of a first object pattern* and a second object pattern, as recited in claim 1. Clearly, the crossed laser beams LB12, LB22 (Fig. 10) disclosed in column 13 cannot constitute a *projected image of a first object pattern*, as

recited in claim 1. Accordingly, with respect to the limitations recited in claim 1, Mizutani is deficient in at least two respects: 1) Mizutani does not teach a detector configured to measure an *amplitude* of at least one order of a diffraction pattern; and 2) Mizutani fails to disclose a diffraction pattern formed by the interference of a *projected image of a first object* pattern and a second object pattern.

At least for these two deficiencies, Mizutani clearly does not anticipate claim 1. Applicants therefore respectfully submit that claim 1 is allowable, and request that its rejection under 35 U.S.C. § 102(b) be withdrawn.

The rejection of dependent claims 2-6, 14, and 16-17 was predicated upon the rejection of claim 1, which, as Applicants have shown, should be allowable. It would be improper to maintain the rejection under 35 U.S.C. § 102(b) of claims 2-6, 14, and 16-17 because they distinguish over the cited art for at least the same reasons as claim 1. Applicants therefore respectfully request that the rejection of claims 2-6, 14, and 16-17 be withdrawn.

Rejection of Independent Claim 18 and Dependent Claims 19-20

Mizutani does not anticipate claim 18 at least for the reasons set forth above regarding claim 1.

Independent claim 18 recites a lithographic apparatus comprising, among other things, a projection system; a first object having at least a first pattern; a second object having a second pattern corresponding to said first pattern; and a detector, wherein the projection system is configured to project a patterned beam including an image of the first pattern onto the second pattern, and wherein the detector is configured to measure an amplitude of at least one order of a diffraction pattern resulting from interference between the second pattern and the projected

image. Thus, claim 18 recites a detector limitation similar to that of claim 1, namely, a detector configured to measure an *amplitude* of at least one order of a diffraction pattern resulting from interference between the second object pattern and *the projected image of the first object pattern*.

The Examiner relies on the same portions of Mizutani in rejecting both claims 18 and claim 1. The teachings of Mizutani are therefore deficient with respect to claim 18 at least for the same reasons set forth above with respect to claim 1. Because Mizutani does not anticipate claim 18, Applicants respectfully submit that claim 18 is allowable, and request that its rejection under 35 U.S.C. § 102(b) be withdrawn.

The rejection of dependent claims 19-20 was predicated upon the rejection of claim 18, which, as Applicants have shown, should be allowable. It would be improper to maintain the rejection under 35 U.S.C. § 102(b) of claims 19-20 because they distinguish over the cited art for at least the same reasons as claim 18. Applicants therefore respectfully request that the rejection of claims 19-20 be withdrawn.

Rejection of Independent Claim 21 and Dependent Claims 22-23

Mizutani does not anticipate claim 21 at least for the reasons set forth above regarding claims 1 and 18.

Claim 21 recites a measurement method, comprising illuminating a first object having at least a first pattern; projecting an image of the first pattern onto a second object having a second pattern corresponding to the first pattern; and measuring an amplitude of at least one order of a diffraction pattern resulting from interference between the second pattern and the projected image. Thus, the latter limitation of claim 21 is similar to the detector limitations of claims 1 and 18.

In rejecting claim 21, the Examiner relies on the same portions of Mizutani used for rejecting claims 1 and 18. The teachings of Mizutani therefore are deficient with respect to claim 21 at least for the same reasons set forth above with respect to claims 1 and 18. Because Mizutani does not anticipate claim 21, Applicants respectfully submit that claim 21 is allowable, and request that its rejection under 35 U.S.C. § 102(b) be withdrawn.

The rejection of dependent claims 22-23 was predicated upon the rejection of claim 21, which, as Applicants have shown, should be allowable. It would be improper to maintain the rejection under 35 U.S.C. 102(b) of claims 22-23 because they distinguish over the cited art for at least the same reasons as claim 21. Applicants therefore respectfully request that the rejection of claims 22-23 be withdrawn.

Rejection of Claims 7, 15, 20 and 24 under 35 U.S.C. § 103(a)

The rejection of dependent claims 7, 15; 20; and 24 was predicated upon the rejection of respective base claims 1; 18; and 21, which, as Applicants have shown, should be allowable. It would be improper to maintain the rejection under 35 U.S.C. § 103(a) of claims 7, 15, 20, and 24 because they distinguish over the cited art for at least the same reasons as claims 1, 18 and 21. Applicants therefore respectfully request that the rejection of claims 7, 15, 20 and 24 be withdrawn.

Rejection of Claims 8-13 and 25-28 under 35 U.S.C. § 103(a)

The rejection of dependent claims 8-13; and 25-28 was predicated upon the rejection of respective base claims 1; and 21, which, as Applicants have shown, should be allowable. It would be improper to maintain the rejection under 35 U.S.C. § 103(a) of claims 8-13 and 25-28 because they distinguish over the cited art for at least the same reasons as claims 1 and 21.

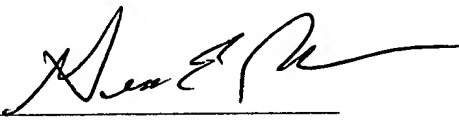
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Applicants therefore respectfully request that the rejection of claims 8-13 and 25-28 be withdrawn.

In view of the foregoing, all of the claims in this case are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for issue, the Examiner is encouraged to telephone applicants' undersigned representative at the number listed below.

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